O3CO

OSFO
/207

OIPE

#3

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                RAW SEQUENCE LISTING              DATE: 11/13/2001
                PATENT APPLICATION:  US/09/882,694   TIME: 14:56:07

                Input Set : A:\Seqlista.txt
                Output Set: N:\CRF3\11132001\I882694.raw
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  4 <110> APPLICANT: Duvick, Jon
  5        Maddox, Joyce
  6        Gilliam, Jacob
  7        Folkerts, Otto
  8        Crasta, Oswald R.
 10 <120> TITLE OF INVENTION: Compositions and Methods for Fumonisin
 11        Detoxification
 13 <130> FILE REFERENCE: 35718/208255
 15 <140> CURRENT APPLICATION NUMBER: 09/882,694
C--> 16 <141> CURRENT FILING DATE: 2001-06-12   OK
 18 <150> PRIOR APPLICATION NUMBER: 09/351,224
 19 <151> PRIOR FILING DATE: 1999-07-12
 21 <160> NUMBER OF SEQ ID NOS: 11
 23 <170> SOFTWARE: FastSEQ for Windows Version 4.0
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 26 <211> LENGTH: 1691
 27 <212> TYPE: DNA
 28 <213> ORGANISM: Exophiala spinifera
 30 <220> FEATURE:
 31 <221> NAME/KEY: misc_feature
 32 <222> LOCATION: (0)...(0)
 33 <223> OTHER INFORMATION: flavin monooxygenase with intron
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 38 aaaatcttcg agggagcccc cgattttggc ggcgtctggc actggaaccg ctaccctggc 180
 39 gctcgtgttg attcggagac gcccttctac caactgaaca ttcccgaagt atggaaagac 240
 40 tggacctggt cttgccgcta tcctgaccag aaagagttgc tgtcatatgt tcaccactgt 300
 41 gacaagatcc ggggcttgag aaaagacgtc tacttcggag ctgaggtggt tgatgcgcgg 360
 42 tatgccagag atctgggcac ctggactgtc aagacgtcgg ctggccatgt tgcgacggca 420
 43 aagtatctca ttctcgctac ggggttgctc cacaggaagc acactcccgc actccccggc 480
 44 ctcgccgatt tcaacgggaa ggtgattcat tcgagtgcct ggcacgaaga cttcgacgca 540
 45 gagggccaga gagtcgccgt catcggtgcc ggggccacaa gcatccagat tgttcaggag 600
 46 ttggccaaga aggctgacca ggtaaccatg tttatgcgaa ggccgagcta ttgtctgccc 660
 47 atgcggcaac gaacgatgga taggaacgaa cagacagcct ggaaggccta ctaccccacg 720
 48 ctgtttgaag cgagtcgaaa gtctcggatt ggattcccgg tccaggcacc gtcggttggc 780
 49 atctttgaag tcagccccga gcagcgggag gcctatttcg aagagttgtg ggagcgtggg 840
 50 gcctttaatt ttcttgcttg ccagtaccga gaagtcatgg ttgacaaaaa ggccaaccga 900
 51 ctggtctatg acttctgggc caaaaagact cgatctcgta tcgtcaatcc ggcaaagaga 960
 52 gatctcatgg ctcctctgga gccgccgtac tggttcggta ccaagcgctc cccactggag 1020
 53 agcgactact acgaaatgct ggacaagccg agcgtcgaaa ttgtgaatct agaacaatcg 1080
 54 cccattgtgg ctgttacaaa gacaggtgtg ctcttgagtg acggcagcaa gagggaatgc 1140
 55 gacacgatcg tgctggcgac gggtttcgac agtttcactg gctcgtgagt gtgctcgatc 1200
 56 atggctccga gtccggacgt ttggctgacc ttgaaagatt gacacatatg ggcttgaaaa 1260
 57 acaagcacgg agtggacctg aaggaggtgt ggaaagatgg catatctact tatatgggag 1320
 58 tcttctctca tggcttcccc aatgccttct tcgtcgccac ggctcaagcc ccgaccgtcc 1380
 59 tttccaacgg cccaacgatc atagaaaccc aagtcgactt gatcgccgat acaattgcaa 1440
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60  agttggaggc cgagcacgcc acgtccgttg aggcgacgaa atcagcacaa gaggcatggt 1500
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62  ctggaggcaa catccctggg aaagcaacac gtgctttaac cttcataggc gggattgctc 1620
63  tctatgagca gatctgtcaa gagaaggtgg ccaattggga tgggtttgat gtgcttcatg 1680
64  ctccctgcta a                                                     1691
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68  <212> TYPE: DNA
69  <213> ORGANISM: Exophiala spinifera
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72  <221> NAME/KEY: misc_feature
73  <222> LOCATION: (0)...(0)
74  <223> OTHER INFORMATION: flavin monooxygenase, fully spliced
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78  ggagccggcc tcagcggcat ctctgctgtg tacaaattgc gaaagctcag actcaacgcc 120
79  aaaatcttcg agggagcccc cgattttggc ggcgtctggc actggaaccg ctaccctggc 180
80  gctcgtgttg attcggagac gcccttctac caactgaaca ttcccgaagt atggaaagac 240
81  tggacctggt cttgccgcta tcctgaccag aaagagttgc tgtcatatgt tcaccactgt 300
82  gacaagatcc ggggcttgag aaaagacgtc tacttcggag ctgaggtggt tgatgcgcgg 360
83  tatgccagag atctgggcac ctggactgtc aagacgtcgg ctggccatgt tgcgacggca 420
84  aagtatctca ttctcgctac ggggttgctc cacaggaagc acactcccgc actccccggc 480
85  ctcgccgatt tcaacgggaa ggtgattcat tcgagtgcct ggcacgaaga cttcgacgca 540
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88  atgcggcaac gaacgatgga taggaacgaa cagacagcct ggaaggccta ctaccccacg 720
89  ctgtttgaag cgagtcgaaa gtctcggatt ggattcccgg tccaggcacc gtcggttggc 780
90  atctttgaag tcagccccga gcagcgggag gcctatttcg aagagttgtg ggagcgtggg 840
91  gcctttaatt ttcttgcttg ccagtaccga gaagtcatgg ttgacaaaaa ggccaaccga 900
92  ctggtctatg acttctgggc caaaaagact cgatctcgta tcgtcaatcc ggcaaagaga 960
93  gatctcatgg ctcctctgga gccgccgtac tggttcggta ccaagcgctc cccactggag 1020
94  agcgactact acgaaatgct ggacaagccg agcgtcgaaa ttgtgaatct agaacaatcg 1080
95  cccattgtgg ctgttacaaa gacaggtgtg ctcttgagtg acggcagcaa gagggaatgc 1140
96  gacacgatcg tgctggcgac gggtttcgac agtttcactg gctcattgac acatatgggc 1200
97  ttgaaaaaca agcacggagt ggacctgaag gaggtgtgga aagatggcat atctacttat 1260
98  atgggagtct ctctcatgg cttccccaat gccttcttcg tcgccacggc tcaagccccg 1320
99  accgtccttt ccaacggccc aacgatcata gaaacccaag tcgacttgat cgccgataca 1380
100 attgcaaagt tggaggccga gcacgccacg tccgttgagg cgacgaaatc agcacaagag 1440
101 gcatggtcga ttatgattgc caagatgaac gagcacactc tgttcccctt gacggattcg 1500
102 tggtggactg gaggcaacat ccctgggaaa gcaacacgtg ctttaacctt cataggcggg 1560
103 attgctctct atgagcagat ctgtcaagag aaggtggcca attgggatgg gtttgatgtg 1620
104 cttcatgctc cctgctaa                                              1638
106 <210> SEQ ID NO: 3
107 <211> LENGTH: 545
108 <212> TYPE: PRT
109 <213> ORGANISM: Exophiala spinifera
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113  1               5                  10                  15
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115          20       .        25            30
116 Leu Arg Lys Leu Arg Leu Asn Ala Lys Ile Phe Glu Gly Ala Pro Asp
117          35            40            45
118 Phe Gly Gly Val Trp His Trp Asn Arg Tyr Pro Gly Ala Arg Val Asp
119      50            55            60
120 Ser Glu Thr Pro Phe Tyr Gln Leu Asn Ile Pro Glu Val Trp Lys Asp
121 65            70            75                  80
122 Trp Thr Trp Ser Cys Arg Tyr Pro Asp Gln Lys Glu Leu Leu Ser Tyr
123              85            90                  95
124 Val His His Cys Asp Lys Ile Arg Gly Leu Arg Lys Asp Val Tyr Phe
125          100            105            110
126 Gly Ala Glu Val Val Asp Ala Arg Tyr Ala Arg Asp Leu Gly Thr Trp
127      115            120            125
128 Thr Val Lys Thr Ser Ala Gly His Val Ala Thr Ala Lys Tyr Leu Ile
129      130            135            140
130 Leu Ala Thr Gly Leu Leu His Arg Lys His Thr Pro Ala Leu Pro Gly
131 145            150            155                  160
132 Leu Ala Asp Phe Asn Gly Lys Val Ile His Ser Ser Ala Trp His Glu
133              165            170            175
134 Asp Phe Asp Ala Glu Gly Gln Arg Val Ala Val Ile Gly Ala Gly Ala
135          180            185            190
136 Thr Ser Ile Gln Ile Val Gln Glu Leu Ala Lys Lys Ala Asp Gln Val
137          195            200            205
138 Thr Met Phe Met Arg Arg Pro Ser Tyr Cys Leu Pro Met Arg Gln Arg
139      210            215            220
140 Thr Met Asp Arg Asn Glu Gln Thr Ala Trp Lys Ala Tyr Tyr Pro Thr
141 225            230            235                  240
142 Leu Phe Glu Ala Ser Arg Lys Ser Arg Ile Gly Phe Pro Val Gln Ala
143              245            250            255
144 Pro Ser Val Gly Ile Phe Glu Val Ser Pro Glu Gln Arg Glu Ala Tyr
145              260            265            270
146 Phe Glu Glu Leu Trp Glu Arg Gly Ala Phe Asn Phe Leu Ala Cys Gln
147      275            280            285
148 Tyr Arg Glu Val Met Val Asp Lys Lys Ala Asn Arg Leu Val Tyr Asp
149      290            295            300
150 Phe Trp Ala Lys Lys Thr Arg Ser Arg Ile Val Asn Pro Ala Lys Arg
151 305            310            315                  320
152 Asp Leu Met Ala Pro Leu Glu Pro Pro Tyr Trp Phe Gly Thr Lys Arg
153              325            330            335
154 Ser Pro Leu Glu Ser Asp Tyr Tyr Glu Met Leu Asp Lys Pro Ser Val
155              340            345            350
156 Glu Ile Val Asn Leu Glu Gln Ser Pro Ile Val Ala Val Thr Lys Thr
157          355            360            365
158 Gly Val Leu Leu Ser Asp Gly Ser Lys Arg Glu Cys Asp Thr Ile Val
159      370            375            380
160 Leu Ala Thr Gly Phe Asp Ser Phe Thr Gly Ser Leu Thr His Met Gly
161 385            390            395                  400
162 Leu Lys Asn Lys His Gly Val Asp Leu Lys Glu Val Trp Lys Asp Gly
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RAW SEQUENCE LISTING   DATE: 11/13/2001
PATENT APPLICATION: US/09/882,694   TIME: 14:56:07

Input Set : A:\Seqlista.txt
Output Set: N:\CRF3\11132001\I882694.raw

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163                   405                   410                   415
164 Ile Ser Thr Tyr Met Gly Val Phe Ser His Gly Phe Pro Asn Ala Phe
165                   420                   425                   430
166 Phe Val Ala Thr Ala Gln Ala Pro Thr Val Leu Ser Asn Gly Pro Thr
167         435                   440                   445
168 Ile Ile Glu Thr Gln Val Asp Leu Ile Ala Asp Thr Ile Ala Lys Leu
169     450                   455                   460
170 Glu Ala Glu His Ala Thr Ser Val Glu Ala Thr Lys Ser Ala Gln Glu
171 465                   470                   475                   480
172 Ala Trp Ser Ile Met Ile Ala Lys Met Asn Glu His Thr Leu Phe Pro
173               485                   490                   495
174 Leu Thr Asp Ser Trp Trp Thr Gly Gly Asn Ile Pro Gly Lys Ala Thr
175           500                   505                   510
176 Arg Ala Leu Thr Phe Ile Gly Gly Ile Ala Leu Tyr Glu Gln Ile Cys
177         515                   520                   525
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179     530                   535                   540
180 Cys
181 545
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184 <210> SEQ ID NO: 4
185 <211> LENGTH: 1464
186 <212> TYPE: DNA
187 <213> ORGANISM: Exophiala spinifera
189 <220> FEATURE:
190 <221> NAME/KEY: misc_feature
191 <222> LOCATION: (0)...(0)
192 <223> OTHER INFORMATION: aldehyde dehydrogenase, fully spliced cDNA
194 <400> SEQUENCE: 4

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197 gatgttcacg tggccaacgc ggccgatgtc gacagtgcag tagccgcttc ggtgcaggcg 180
198 gtcaaaaagg gcccatggaa gaagttcaca ggtgcacaac gcgcggcgtg catgcttaag 240
199 ttcgcggacc tcgccgagaa gaacgccgag aagctcgctc gtctggagtc gctgcccacc 300
200 ggtagaccgg tgtcgatgat cactcatttc gacattccaa acatggtctc cgtgtttcgc 360
201 tactatgcag gctgggccga caagatcgcc ggaaagacct ttcccgagga caacggcaag 420
202 ccgaattggc gttacgagcc gatggggtg tgtgctggta ttgccagctg gaacgcgact 480
203 tttctttacg tcggctggaa gatagccccc gccctcgccg ccggctgctc cttcatcttc 540
204 aaagcctcgg agaaatcccc gctgggcgtt ctgggcctcg ctcctctctt cgcagaagcc 600
205 ggattccctc ctggagtcgt gcagttcctc actggagcac gagtgacggg tgaagcattg 660
206 gcgtcgcaca tggacattgc gaagatcagc ttcacaagat ctgtcggcgg tggccgcgcc 720
207 gtcaagcaag caacactcaa gtccaacatg aagcgcgtca ctctagaact gggggaaaag 780
208 ccaaccatcg tcttcaacga agctcctctc gaacggcagt cgggggaatc ggcaaaggat 840
209 ttctcaaaat tcgggcaaat ttgggtcccc ccctcctgtt tgctagtgca atggggaaat 900
210 ttagcggaga aattccatgg agtccgtcat ggctcatttg gaggctgtca gagatggctt 960
211 ggccagaacc cattggaacc caagaggacg catggtccct cgtcgacaa gtcccagtac 1020
212 gacagagtct tgggtaacat tgacgttggc aaggataccg cgcagctcct cactggcgtt 1080
213 ggtagaaagg gcgacaaggg attcgcgatt gaaccgacga tatttgtcaa tcccaaacca 1140
214 ggcagcaaaa tttggttttga ggagatcttt ggccccgtct tgtccattaa gacgttcaag 1200
215 acggaagaag aggccattga gattgccaat gacacgactt atgggctagc ctcggtcatt 1260
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216 tataccaaat ctctcaacag gggtctccgt gtctcgtcgg cgctcgagac cggtggcgtc 1320
217 tcgatcaact tccccttttat ccccgagaca caaactccgt ttggcggcat gaaacaatcg 1380
218 ggctcaggca gagagctagg cgaagaaggg ctcaaggcgt acttggagcc caagaccatt 1440
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222 <211> LENGTH: 487
223 <212> TYPE: PRT
224 <213> ORGANISM: Exophiala spinifera
226 <400> SEQUENCE: 5
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230              20                  25                  30
231 Trp Asp Glu Ser Thr Val Ala Thr Asp Val His Val Ala Asn Ala Ala
232          35                  40                  45
233 Asp Val Asp Ser Ala Val Ala Ala Ser Val Gln Ala Val Lys Lys Gly
234      50                  55                  60
235 Pro Trp Lys Lys Phe Thr Gly Ala Gln Arg Ala Ala Cys Met Leu Lys
236 65                  70                  75                  80
237 Phe Ala Asp Leu Ala Glu Lys Asn Ala Glu Lys Leu Ala Arg Leu Glu
238              85                  90                  95
239 Ser Leu Pro Thr Gly Arg Pro Val Ser Met Ile Thr His Phe Asp Ile
240             100                 105                 110
241 Pro Asn Met Val Ser Val Phe Arg Tyr Tyr Ala Gly Trp Ala Asp Lys
242             115                 120                 125
243 Ile Ala Gly Lys Thr Phe Pro Glu Asp Asn Gly Lys Pro Asn Trp Arg
244     130                 135                 140
245 Tyr Glu Pro Met Gly Val Cys Ala Gly Ile Ala Ser Trp Asn Ala Thr
246 145                 150                 155                 160
247 Phe Leu Tyr Val Gly Trp Lys Ile Ala Pro Ala Leu Ala Ala Gly Cys
248             165                 170                 175
249 Ser Phe Ile Phe Lys Ala Ser Glu Lys Ser Pro Leu Gly Val Leu Gly
250             180                 185                 190
251 Leu Ala Pro Leu Phe Ala Glu Ala Gly Phe Pro Pro Gly Val Val Gln
252             195                 200                 205
253 Phe Leu Thr Gly Ala Arg Val Thr Gly Glu Ala Leu Ala Ser His Met
254     210                 215                 220
255 Asp Ile Ala Lys Ile Ser Phe Thr Arg Ser Val Gly Gly Gly Arg Ala
256 225                 230                 235                 240
257 Val Lys Gln Ala Thr Leu Lys Ser Asn Met Lys Arg Val Thr Leu Glu
258             245                 250                 255
259 Leu Gly Glu Lys Pro Thr Ile Val Phe Asn Glu Ala Pro Leu Glu Arg
260             260                 265                 270
261 Gln Ser Gly Glu Ser Ala Lys Asp Phe Ser Lys Phe Gly Gln Ile Trp
262             275                 280                 285
263 Val Pro Pro Ser Cys Leu Leu Val Gln Trp Gly Asn Leu Ala Glu Lys
264     290                 295                 300
265 Phe His Gly Val Arg His Gly Ser Phe Gly Gly Cys Gln Arg Trp Leu
266 305                 310                 315                 320
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VERIFICATION SUMMARY   DATE: 11/13/2001
PATENT APPLICATION: **US/09/882,694**   TIME: 14:56:08

Input Set : **A:\Seqlista.txt**
Output Set: **N:\CRF3\11132001\I882694.raw**

L:16 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:630 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11